do not have that option: Verizon includes DCS costs in its dedicated transport rates charged to CLECs. AT&T/WCOM Exh. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 133-34.

DCS facilities should not be part of the dedicated transport costs, and CLECs should have the option to purchase DCS separately. This Commission in its *Local Competition Order,* Verizon in its tariffs, and Verizon's agreements with AT&T and WorldCom all specify that DCS should be made available separately to CLECs, and CLECs should be free to determine if they want to purchase this service. AT&T/WCOM Exh. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 133-36; *Local Competition Order*, ¶ 447; Verizon Special Access Tariff FCC 1, § 7.2.12 (E), (F).

There has been some confusion as to whether the DCS facilities were properly part of the recurring cost case or the mediation. During the hearing, AT&T/WorldCom witness Steven Turner made clear that his proposal for a separate DCS service applied only to those DCS facilities at the ends of circuits and did not apply to backbone DCS facilities required for interconnection. Tr. 5619 (Turner). With this clarification, there is no reason why DCS should not be a separate item available for purchase (or not) by CLECs.[163]

c. The Commission Should Adopt a Reasonable EF&I Factor

Verizon proposes an EF&I factor for transmission equipment of 53.2 percent in Virginia. This figure is significantly higher than comparable EF&I figures for transmission equipment, which are typically in the 30 percent range. AT&T/WCOM Exh. 12 (AT&T/WorldCom Recurring Cost Panel Reb.) at 139. Other than claiming that the EF&I factor reflects its actual expenditures, Verizon fails to justify the reasonableness of its

[163] AT&T and WorldCom have also proposed multiplexing rates to assist CLECs to take entrance facilities at lower transport speeds and combine these together through unbundled access to take advantage of higher speed interoffice dedicated transport. Verizon has not proposed multiplexing rates. AT&T/WCOM Exh. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 137-38.

expenditures or explain why the figure is higher than the 30 percent range. Moreover, Verizon refuses to identify the component costs supporting that factor and defends itself by stating that it never separately identifies its EF&I costs. Verizon Exh. 122 (Verizon Recurring Cost Surreb.) at 161.

In the recent New York UNE cost proceeding,[164] Verizon proposed and the administrative law judge accepted an EF&I factor for transmission equipment of 36.4 percent. There is no reason to believe that installation costs in Virginia should be 46 percent greater than the 36.4 percent factor used in New York. Verizon uses the same equipment vendors for transport equipment in New York as in Virginia, so it is unlikely that such a large difference is supportable. Accordingly, in the absence of evidence that the Virginia EF&I factor is reasonable, the Commission should adopt an EF&I factor of 36.4 percent for transmission equipment in Virginia. AT&T/WCOM Exh. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 138-39.

With these adjustments, the dedicated transport rates proposed by AT&T and WorldCom are those attached hereto in Appendix 1.

2. The AT&T/WorldCom Common Transport Rates Are Reasonable.

The common transport costs developed by the Synthesis Model are approximately four times the common transport costs derived by Verizon in its cost study.[165] Notwithstanding the difference in costs, AT&T and WorldCom believe that the Synthesis Model common transport costs are more appropriate than Verizon's costs.

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[164] State of New York Public Service Commission, *Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements,* Case No. 98-C-1357, Workpaper Part C-1 – Section 1.0 to the Panel Testimony of Bell Atlantic-New York on Revised Costs and Rates for Unbundled Network Elements and Related Wholesale Services, Feb. 24, 2000, p. 3.

[165] The Synthesis Model common transport cost is based on minutes of use, whereas the Verizon common transport cost includes both a minute of use component and a distance factor.

As noted above, both sides agree that modeling interoffice transport costs is very difficult, particularly in the absence of point-to-point traffic flows. The Synthesis Model interoffice transport module is derived from the HAI model and uses algorithms based on factors such as wire center line counts, traffic levels, and access lines to determine the number of required trunks, develop SONET rings to interconnect offices, and derive the associated facilities to carry the projected traffic. AT&T/WCOM Exh. 23 (AT&T/WCOM Cost Models). Significant engineering judgments underpin these algorithms, and the Synthesis Model models a set of facilities based on these algorithms and engineering assumptions. A number of these algorithms and inputs have changed over time in state cost proceedings to correct errors and improve their accuracy.[166]

In contrast to the Synthesis Model, Verizon does not attempt to model a network but instead determines the cost of traffic entering and exiting a SONET ring and then develops the equipment required to serve that traffic, relying largely on its embedded base to establish the network to be served. Tr. 5548-49 (Turner). Verizon then applies what it describes as "forward-looking assumptions" to the number of nodes per ring and the average distance between the nodes based on work by its interoffice traffic experts. Verizon Exh. 107 (Verizon Cost Panel Dir.); Verizon Exh. 122 (Verizon Cost Panel Surreb.) at 152; Tr. 5627-28 (Gansert). In the end, as Verizon witness Joseph Gansert testified, Verizon's interoffice calculations are largely based on estimates developed by its committee of interoffice "experts." Tr. 5628 (Gansert). But Verizon's model does not attempt to identify the actual network configuration or seek to develop the SONET rings that would support the demand on the network. Tr. 5548-49 (Turner). Clearly,

[166] Some of these interoffice module changes, which inadvertently were not included in the filing of the Synthesis Model on July 2, 2001, were made in the surrebuttal round after Verizon commented on the errors in rebuttal testimony. AT&T/WCOM Exh. 19 (Turner Surreb.) at 12; AT&T/WCOM Exh. 14 (Pitkin Surreb.) at 72-73; Verizon Exh. 109 (Murphy Reb.) at 63; Tr. 5572-73 (Turner, Pitkin).

the Synthesis Model goes farther than Verizon's interoffice cost study and develops the facilities to serve the projected demand.

Verizon's various criticisms of the Synthesis Model are largely without merit.[167] A principal complaint by Verizon about the Synthesis Model is that it does not take into account the point-to-point traffic in developing facilities. Verizon Exh. 163 (Murphy Supplemental Surreb.) at 3, 9-10, 15. But this criticism applies equally to Verizon's cost model, which does not attempt to model a forward-looking network. Tr. 5548 (Turner). Verizon also criticizes the Synthesis Model for underestimating the facilities, but this criticism ignores the fact that the Synthesis Model common transport costs are twice as high as those of Verizon. Tr. 5551-52 (Turner). Moreover, Verizon's argument that the Synthesis Model fails to build sufficient facilities is based on a hypothetical interoffice network – which Verizon witness Murphy concedes is a "high end situation" Verizon Exh. 109 (Murphy Reb.) at 62 n.60 -- that nowhere exists in the Verizon network and would never be built by Verizon or any engineer. AT&T/WCOM Exh. 19P (Turner Surreb.) at 9-10.

Verizon's other criticisms of the Synthesis Model are equally groundless. Verizon claims that the Synthesis Model fails to provide for sufficient trunks. Verizon Exh. 109 (Murphy Reb.) at 57-58. In fact, the Synthesis Model develops the appropriate number of trunks based on traffic demand, dial equipment minutes, and ARMIS trunk data. AT&T/WorldCom witness Steve Turner determined that the assumptions built into the Synthesis Model accurately

[167] During their testimony, AT&T/WCOM witnesses Steve Turner and Brian Pitkin acknowledged that Dr. Tardiff's criticism about investment for remote switches had merit but concluded that the cost impact was minor. Tr. 5607-08 (Messrs. Turner & Pitkin). *See* Verizon Ex. 162 (Tardiff Supp. Surreb.) at 11-14.

determine the number of trunks necessary to provide interoffice transport in Virginia. AT&T/WCOM Exh. 19P (Turner Surreb.) at 2-3.[168]

Verizon also argues that the Synthesis Model cannot handle the peak traffic. Verizon Exh. 109 (Murphy Rebuttal) at 53-55. In fact, however, the Synthesis Model uses the same method (in reverse) as Verizon for dealing with busy day traffic. Indeed, the "Busy Hour to Annual Ratio" used by Verizon to convert its busy hour usage into a total number of minutes is almost identical to the number derived using the Synthesis Model. AT&T/WCOM Exh. 19P (Turner Surreb.) at 5-7. Thus, the Synthesis Model handles appropriately peak period traffic and develops sufficient facilities to meet peak period demand.

The interoffice module of the Synthesis Model is by no means perfect, but it provides an appropriate, if conservative, estimate of common transport costs. These common transport costs are attached here to as Appendix 1. If the Commission decides to use Verizon's common transport costs, however, those costs were developed using the same underlying cost elements set forth in Verizon's dedicated transport cost study, and accordingly the same adjustments proposed by AT&T and WorldCom should therefore be made to the common transport costs. AT&T/WorldCom have made those adjustments to Verizon's common transport cost study and included the resulting costs as part of AT&T Exhibit 149. Tr. 5541-43 (Turner).

H. OSS/Access to OSS

Verizon proposes to apply a recurring "Access to OSS" charge of $0.87 per month per line to all UNE loops, UNE platforms and resale loops. Verizon asserts that this charge is designed to recover: "(1) initial development costs to make … access to Verizon VA's operations support systems possible; and (2) the associated recurring capital costs and ongoing

[168] Verizon's claims that access trunks were understated and that the Synthesis Model failed to take account of trunk modularity were equally unfounded. Turner Surrebuttal (AT&T/WCOM Ex. 19) at 7-9.

maintenance expenses associated with provisioning OSS Access on an ongoing basis." VZ Exh. 107 (Cost Panel Dir.) at 242-243; AT&T-WCOM Exh. 12/12P (Recurring Cost Panel Reb.) at 142-67. To date, no state regulator in the Verizon footprint, including the Virginia SCC in the 1997 UNE pricing proceeding, has authorized recovery of OSS access charges like the ones proposed here. 13 Tr. 3952, 3978 (Minion). Verizon has failed to justify a different outcome in this case. We discuss the proper treatment of competition-onset and ongoing costs in turn.

1. Recovery of competition-onset costs

The one-time development costs in Verizon's "access to OSS" study are caused by the transition to a competitive environment, not by new entrants' orders for UNEs. Therefore, it is inappropriate to recover these costs solely from new entrants. Because new entrants incur costs for their own portion of the electronic gateway between their operation and Verizon's OSS, the simplest competitively neutral mechanism for cost recovery is to require each company to bear its own costs for access to OSS. AT&T-WCOM Exh. 12/12P (Recurring Cost Panel Reb.) at 144-48. This procedure is also the only way to give Verizon an incentive to select the most efficient means of complying with its competition-onset obligations. If Verizon is allowed to pass on to CLECs the costs of developing the necessary new gateways and functions, Verizon's incentive will be to do so in as costly and inefficient manner as possible. *Id.* at 152-53.[169]

[169] Verizon's assertion that its OSS costs are "scrutinized" by the Virginia SCC or other regulatory bodies (Verizon Exh. 117 (Shelanski-Tardiff Surreb.) at 38) is untrue. As Mr. Minion acknowledged during cross-examination, there would be no basis for the FCC or the Virginia SCC to second-guess the reasonableness of those costs under a price-cap regulatory scheme, and the Virginia SCC last reviewed the reasonableness of Verizon's OSS costs in 1996-97, "when people really did not know . . . how the market would develop and what would be required." Tr. 3947-49.

If the Commission authorizes any explicit charge for access to OSS charge, however, the charge should take the form of a competitively neutral surcharge on all Virginia telecommunications users.[170] Verizon's surrebuttal testimony asserts that an end-user surcharge of this kind would be unlawful and the source of an improper subsidy for CLECs.[171] Verizon itself proposed recovering OSS costs through an end-user surcharge in Hawaii, however, and has consented to a similar arrangement in New York.[172] Moreover, even if the FCC lacks jurisdiction to impose an end-user charge directly, the FCC could reject OSS charges altogether on the premise that Verizon, if it so chose, could ask the Virginia SCC to impose such a surcharge. 13 Tr. 3945 (Minion).

Based on Verizon's reported access to OSS costs, an eight-cent per month per line surcharge would be ample to recover all of the alleged costs over a ten-year period. Even the eight-cent per month surcharge figure is likely too high, because Verizon's access to OSS cost study almost certainly reflect costs that are embedded or short-run, rather than forward-looking and long run;[173] costs of systems that are redundant or obsolete;[174] costs incurred to satisfy FCC

[170] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 148-52 (citing state and FCC precedent); WCOM Exh. 122 and 123 (decisions of California and Hawaii commissions adopting end-user surcharges to recover costs of access to OSS).

[171] Verzon Exh. 122 (Recurring Cost Panel Surreb.) at 214-24; Verizon Exh. 117 (Shelanski-Tardiff Surreb.) at 59.

[172] 13 Tr. 3940-43 (Minion); WCOM Exh. 114 (Verizon opening brief to the Hawaii PUC filed Jan. 10, 2001) at 12-13.

[173] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 153-54.

[174] *Id.* at 157. Verizon purported to design its OSS access charge to recover the OSS development costs the company incurred during 1996-99. The OSS systems developed during 1996-99 that are now partially or wholly obsolete include certain billing systems that have been superseded by Express Track; the Verizon South preorder graphical user interface ("GUI") known as ECG; and the basic ordering interfaces that preceded Local Service Ordering Guide ("LSOG") 4 and 5. Tr. 3914-24 (Minion).

conditions to the approval of the mergers that created Verizon;[175] and costs that Verizon has also proposed to recover in its recurring charges for individual UNEs or its charges to resellers of wholesale service.[176] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 153-59. The FCC has no way to verify that these improper costs were excluded: Verizon's cost study documentation is too cursory and incomplete. AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 153-59; 13 Tr. 3975-76 (Murray).

2. Recovery of ongoing OSS expenses

Approximately 56 percent of Verizon's proposed Access to OSS charge is purportedly designed to recover the ongoing costs of maintaining and improving OSS. Verizon has not estimated these ongoing costs directly, and has simply *assumed* that annual software maintenance costs will equal 15 percent of initial development costs. Verizon provides virtually no support for this ratio, makes no attempt to account for reductions in OSS computer costs over time, and, in any event, cannot reasonably apply this ratio to OSS development costs that are themselves inflated. For these and other reasons, Verizon should be required to recover its ongoing OSS costs in the same way it captures all normal forward-looking recurring OSS expenses, through its normal cost factors.[177]

[175] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 157; Tr. 39301-3932 (Minion).

[176] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 157-58; Tr. 3957-59 (Murray) (explaining nature of potential double-recovery); *id.* at 3962-64 (colloquy between Mr. Minion and FCC Staff).

[177] AT&T-WCOM Exh. 12P (Recurring Cost Panel Reb.) at 159-67; Tr. 3960 (Murray) (noting that AT&T and WorldCom followed this procedure in their runs of the Synthesis Model).

I. Daily Usage File ("DUF")

The Daily Usage File ("DUF") provides competitors with records of their customers' intraLATA local and toll usage detail for billing purposes. Each call is recorded as a "message." Verizon has proposed several DUF charges for recording and transmitting the DUF messages, the most significant of which is a per-message "Message Recording" charge of $0.0015 per message. AT&T-WCOM Exh. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 167.

This proposed charge is *six times* the current price in Virginia of $.000246 per message (which is itself inflated), and also well out of proportion with the prices adopted in other states. For a subscriber that generates 200 messages per line per month, this charge would add $0.30 per line per month to the CLEC's costs of serving that customer. *Id.* According to Verizon's workpapers, 99 percent of the dollars that Verizon seeks to recover in its per-message recording charge are the costs of 15 support employees who monitor and manage the product, as well as manually handle errors in the automated processes. *Id.* at 168 & n. 166.

These costs are inflated in several respects. First, the types of costs Verizon has included here are the same types of costs it claims to be recovering through its proposed annual cost factors; hence, including these supposed labor costs in the per-message DUF charge would likely double-recover Verizon's costs. *Id.* at 168-69, 170-71.

Second, Verizon has spread the DUF costs over an implausibly low number of messages, and has compounded the error by assuming an implausibly low rate of growth in demand. Specifically, Verizon has assumed that the total demand for DUF messages in the region will be under **[BEGIN VERIZON PROPRIETARY]** **[END VERIZON PROPRIETARY]** million per year in 2000, and will increase by only slightly more than **[BEGIN VERIZON PROPRIETARY]** **[END VERIZON PROPRIETARY]** percent per year after that. 13 Tr. 3989 (Minion); Verizon Cost Study Exh. F-3. This is much lower than the rate of growth that Verizon predicts for overall demand for resale and UNE-P in the same region during the same period:

[BEGIN VERIZON PROPRIETARY]

[END VERIZON PROPRIETARY]

Assume that the average line will generate 200 messages per month, the disparity between the two sets of growth rates implies that only **[BEGIN VERIZON PROPRIETARY]** **[END VERIZON PROPRIETARY]** percent of resale and UNE-P lines will have customers subscribing to DUF in the years 2002, 2003 and 2004, respectively. These percentages are much lower than the take rates assumed by Verizon in *sizing* its DUF service center, however. For that purpose, Verizon assumed that a *majority* of resale and UNE-P customers would subscribe to DUF. *See* Tr. 3992 (Minion).

There is no indication that Verizon has ever made any "adjustment on a forward-looking basis to match the size of the CBO [customer billing organization] to the size of the demand." Tr. 3999 (Murray). Because the predominantly labor-related costs of the CBO should be closely scaleable with demand, Verizon's failure to reduce the assumed scale of its DWO in proportion to the decline in the estimated demand for DUF has substantially inflated Verizon's estimate of the unit cost of DUF service. *Id.*

II. NON-RECURRING COSTS

A. The Commission Should Adopt the AT&T/WorldCom Non-Recurring Cost Model and Reject Verizon's Proposal as Failing to Comply with the Requirements of the Act and the Commission's Rulings.

In 1996, this Commission directed that rates for UNEs, including non-recurring costs ("NRCs") "be based on the most efficient telecommunications technology currently available and the lowest cost of network configuration. . . ."[178] Five years later, Bell Atlantic has managed to extend its regional monopoly and change its name to Verizon, but it has been unable or unwilling to propose NRCs based upon this straightforward standard. Instead, Verizon claims to have measured the non-recurring costs of its existing network and processes and, then, "adjusted" them based upon "anticipated mechanization." Verizon Ex. 100, Ex. Part H, Section A, p. 4; *see also* Tr. 4762 (Curbelo).

The Commission cannot accept Verizon Virginia's NRC study and properly comply with TELRIC forward-looking requirements because Verizon's entire model is based upon backward-looking embedded network assumptions. Furthermore, the Verizon study is faulty because it: (1) assumes a different network and processes from that assumed in Verizon's recurring cost model; (2) improperly loads recurring costs into non-recurring rates; (3) was developed utilizing faulty survey data inappropriately adjusted by an unidentified panel of experts through an undocumented process; and (4) does not recognize the cost reductions associated with the modernization and mechanization of certain tasks that in the past have been performed manually.

In stark contrast, the Non-Recurring Cost Model ("NRCM") proposed by AT&T/WorldCom does meet the forward-looking standard for developing NRCs and should be

178 47 C.F.R. § 51.505(b)(1).

adopted by the Commission. AT&T/WorldCom's model is based entirely on forward-looking network assumptions and appropriately categorizes non-recurring and recurring costs in accordance with sound economic principles of cost causation. To be TELRIC compliant, the rates adopted by the Commission must reflect mechanized, not manual, processes that, to the maximum extent practical, minimize costly human intervention. The NRCM reflects this principle; it uses inexpensive mechanized processes for handling CLEC orders wherever possible and prices only those processes which must be performed manually.

The NRCM properly reflects the fact that in today's modern telecommunications network most of the processes needed to order and provision unbundled network elements are mechanized and can be performed by Verizon's Operations Support Systems ("OSS"). In a forward-looking environment, even more of the processes will be mechanized and the need for manual intervention will continue to diminish. The AT&T/WorldCom NRCM recognizes that CLECs are sophisticated telecommunications carriers, who have every commercial interest in presenting service order information to ILECs electronically on a schedule, in a format, and with such accuracy designed to achieve the highest possible level of flow-through.

The Verizon cost study acknowledges a flow-through ordering system, but then negates the cost savings of efficient flow-through by interposing significant manual processes in the provisioning process. This analysis runs directly counter to the continuing trend throughout the telecommunications business to replace manual processes with automated, time saving processes. Telcordia, formerly Bellcore, and the RBOCs have automated those processes that they wanted to automate (Verizon Ex. 124, Attachment E) and provisioning of the RBOCs' retail services today is largely mechanized. The provisioning of unbundled network elements should be mechanized, as well. Verizon's failure to accept this substantially exaggerates the amount of manual labor cost in the non-recurring rates presented by Verizon.

A properly constructed model also must adhere to the principle of cost causation; the theory that costs, such as construction and maintenance, which are incurred over time must be recovered in recurring rates and excluded from non-recurring rates.[179] Verizon's model fails to comply with this principle. AT&T/WorldCom Ex. 8 (Murray Dir.) at 29-32.

In addition, recurring and non-recurring costs both must be derived from the same assumed forward-looking network. If the network constructs are not the same, the NRCs will not reflect the proper activities to interconnect to that network. AT&T/WorldCom Ex. 11P (Murray Reb.) at 41-9. It would be an apples to oranges comparison. This point was recognized in the Massachusetts Consolidated Arbitrations Docket, where the Department expressly rejected the use of inconsistent network assumptions, and made clear that UNE recurring rates and NRCs must be based on the same network assumptions.[180] Verizon has not met this requirement. Tr. 4897 (Curbelo). Instead, it has "dumbed down" its network assumptions for nonrecurring costs by assuming the use of Universal Digital Loop Carriers ("UDLC") for the purpose of unbundling fiber-fed loops for CLECs. The use of UDLC equipment is not forward-looking, and is flatly inconsistent with the forward-looking Integrated Digital Loop Carrier ("IDLC") technology partly assumed in Verizon's recurring cost model. Moreover, Verizon has assumed throughout its study that OSS will not perform the automated tasks for which they are designed. Thus, CLECs would pay for efficient processes in recurring rates, but then have to pay non-recurring rates for manual activity as if those processes were not fully implemented.

Verizon chose *not* to study the non-recurring costs of unbundling a forward-looking network, but instead, based its cost model on time estimates for tasks involved in unbundling the current *embedded* network through existing inefficient processes. Verizon then

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179 *See* 47 C.F.R. § 51.507(d); *see also* Local Competition Order at ¶¶ 745, 750 and 751.

180 *Consolidated Arbitrations Docket*, D.P.U./D.T.E. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, Phase 4-L Order at 16-19 (Oct. 14, 1999), Phase 4-0 Order at 11-12 (Jan. 10, 2000).

allegedly "adjusted" the results to generate what amounts to somewhat discounted embedded costs. Verizon Ex. 100, Ex. Part H, Section A, p. 4; *see also* Tr. 4762 (Curbelo).

This Commission required states to protect against excessive NRCs because of their potential to act as barriers to entry.[181] Non-recurring prices are a crucial issue for competition because: (1) they are an up-front cost of doing business that new entrants will incur in conjunction with each customer that they win from Verizon; and (2) conversely, they are a cost that Verizon will *not* incur to maintain its monopoly legacy customers. Non-recurring charges, if they are not based on forward-looking costs, can add significantly to the total cost that a new entrant will incur to use Verizon's unbundled network elements, making competitive entry using those elements uneconomic. These "entrance fees" can increase the capital that a new entrant must invest up-front before it receives even a penny of revenue from its retail customer. Thus, to create the conditions under which local competition can flourish, non-recurring charges for unbundled network elements must not exceed the forward-looking, efficient level necessary to compensate Verizon for the costs that the new entrant truly causes Verizon to bear. AT&T/WorldCom Ex. 8 (Murray Dir.) at 24-8.

Unlike recurring charges for unbundled network elements or recurring costs for a new entrant's own facilities, non-recurring charges are a sunk cost.[182] A new entrant cannot

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181 In the Local Competition Order at ¶ 747, this Commission stated:

> Accordingly, we find that imposing nonrecurring charges for recurring costs could pose a barrier to entry because these charges may be excessive, reflecting costs that may (1) not actually occur; (2) be incurred later than predicted; (3) not be incurred for as long as predicted; (4) be incurred at a level that is lower than predicted; (5) be incurred less frequently than predicted; and (6) be discounted to the present using a cost of capital that is too low.

182 Even Verizon's economist, Dr. Shelanski, agreed that non-recurring charges are the equivalent of sunk investments and can therefore constitute barriers to entry. Tr. 3195 (Shelanski).

obtain a refund or repayment for any or all of the non-recurring charges it pays Verizon, even if the new entrant ultimately loses the retail client on whose behalf it incurred the charge. Because incumbent local exchange carriers such as Verizon currently have virtually a 100% market share for local service, the difference in the effect of non-recurring charges on the competitive positions of incumbents and new entrants is enormous. At least initially, almost all non-recurring charges associated with customers switching service providers will fall on new entrants simply because all of their customers are "new." And, because new entrants generally must offer *lower* prices than Verizon to win customers, it is clear that non-recurring charges that are not properly based on forward-looking costs will create an insurmountable obstacle for new entrants. *Id.*

Appendix 2 to this Brief contains the non-recurring charges produced by AT&T/WorldCom's NRCM, which the Commission should adopt. These rates properly reflect the degree of mechanization expected in a forward-looking telecommunications network. Among the key rates proposed are the following:

- UNE Platform Migration - $0.26
- UNE Platform Install - $0.26
- UNE Loop Migration - $3.16
- UNE Loop Install - $3.05

B. The AT&T/WorldCom Non-Recurring Cost Model (NRCM) Reflects Forward-Looking, Currently Available Technologies And Processes.

The AT&T/WorldCom NRCM develops costs for non-recurring functions by first identifying the required activities that Verizon must perform in a forward-looking, TELRIC-compliant network, then estimating the amount of time required to perform each activity, and finally incorporating the percentage of times that an activity will happen. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 28-29.[183]

The Model Description, also filed with the NRCM, fully explains the methodology, assumptions, and data inputs used by the model to develop non-recurring charges.[184] The critical assumptions used in developing the charges are described in the Model Description and in even greater detail in the Technical Assumptions Binder ("NTAB"),[185] which was also filed with the NRCM. AT&T/WorldCom Ex. 2 (Walsh Dir.) at NRCM Documentation and NRCM Results for Verizon. As explained in these documents, the model assumes the same forward-looking network that is the basis of the AT&T/WorldCom recurring model. As in the case of AT&T/WorldCom's recurring cost model, the NRCM utilizes an 8% overhead factor for establishing non-recurring costs.

The NRCM develops reasonable, forward-looking charges that reflect the efficiencies inherent in a forward-looking network that uses automated operations support systems and efficient processes. Telephone companies such as Verizon have already developed

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183 The NRCM is open to public scrutiny, flexible, and user-friendly. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 4 and NRCM Model Description and User Guide. The model was filed with a User Guide, which allows other parties to re-run the model with different inputs.

184 The NRCM identifies 225 detailed steps that may occur when a CLEC order is placed and then maps the activities to each network element which is costed. The costs reflect the activities performed, the probability of the activities' occurrence, the time to complete the activity, and the following additional inputs: labor rates, copper loop percentage, manned vs. unmanned central office ratio, trip time, work activities per order, percentage dedicated facilities, common overheads, and fallout. AT&T/WorldCom Ex. 2 (Walsh Dir.) at NRCM Model Description, Attachment B.

185 The NRCM assumes that Verizon's operations support systems are operating efficiently, which means that fallout caused by database synchronization and other errors is minimal. Fallout is important because in many instances it is the only cost driver in an otherwise seamless electronic flow-through process. The NRCM reflects a 2% fallout rate based upon industry experience. AT&T/WorldCom Ex. 2 (Walsh Dir.) at NRCM User Guide, 9-12.

mechanized, efficient systems and processes to manage the large volume of orders that they receive for their retail services. In a forward-looking environment, wholesale orders from CLECs can and should be processed efficiently and electronically, using the same mechanized, efficient systems and processes. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 14-15. As CLEC orders for unbundled network elements become routine and repetitive, they will be processed accordingly.

The charges developed in the NRCM appropriately reflect the least cost, most efficient technologies available. These technologies include a network architecture that takes advantage of intelligent, processor-controlled network elements that communicate with the operations support systems in a manner that minimizes manual intervention in the provisioning process. The use of such technology and operations support systems is prevalent in the telecommunications industry in order to minimize cost and improve customer service. *See id.*, *see also* Tr. 4899-4902 (Walsh and Murray), AT&T Ex. 140 and Verizon Ex. 124, Attachment E, p. 5.

Thus, the NRC rates proposed by AT&T/WorldCom incorporate the efficiencies provided by automated Intelligent Network Elements (such as SONET, GR-303-IDLC, and Digital Cross Connect Systems), which allow for the electronic provisioning of orders. Importantly, the NRCM is not based on a "fantasy network," but instead reflects the same work groups and processes that Verizon employs to provide similar functions for its own retail operations. Moreover, while premised on mechanized efficient systems and processes, the NRCM appropriately includes, in developing NRCs, necessary manual activities. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 35-36; *see also* Tr. 4892 (Murray).

Similarly, the NRCM fully reflects the capabilities of modern OSS. These systems are the electronic, software-driven computer programs and databases that telephone companies use to manage the functions of ordering, provisioning, repairing and maintaining service for both their retail and wholesale operations. Such software programs and databases operate in a highly automated manner with little or no human intervention. Although at one time functions such as processing service orders were very labor intensive, today's systems and databases allow ordering and provisioning to occur electronically. As these automated systems developed over the past two decades, the emphasis was on developing flow-through systems, which allowed service requests to flow through several connected computer systems without human intervention. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 14-15; *see also* Tr. 4899-4902 (Walsh and Murray), AT&T Ex. 140 and Verizon Ex. 124, Attachment E, p. 5.

The NRCM reflects the principle that the costs associated with fulfilling orders should be based on the most efficient integrated OSS that are available today. AT&T/WorldCom Ex. 8 (Murray Dir.) at 34. The typical service order flow occurs electronically and is simply the automatic coordinated functioning of several compatible systems. Each system performs its particular function and then sends instructions to the next system so that its function can be performed. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 14-15. The automatic flow-through flow process described by Mr. Walsh is in place today; it is not necessary for Verizon to build anything new to achieve flow-through functionality. The NRCM properly assumes the efficient operation of the typical OSS that exists within the industry today and that are consistent with a forward-looking methodology. *Id.* at 15; *see also* Tr. 4899-4902 (Walsh and Murray), AT&T Ex. 140, and Verizon Ex. 124, Attachment E, p. 5.

Database assumptions can play an important role in determining non-recurring costs. Database maintenance is an important on-going activity of all telephone companies in order to minimize errors, improve customer service and reduce operating costs. A database containing inaccurate or incorrect data will cause fall-out and the requirement for manual intervention. Reliance on fallout data that reflect improperly maintained databases can lead to overstated NRCs. The NRCM properly reflects databases that are adequately maintained and contain accurate information regarding customers and facilities. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 16-7; *see also* AT&T/WorldCom Ex. 8 (Murray Dir.) at 36-7.

The Verizon study inappropriately includes a number of manual functions that reflect ILEC activities to correct database errors. These costs should not be included in non-recurring costs because: (1) database maintenance is an on-going activity which was reflected in the recurring UNE cost studies; (2) CLECs should not be required to pay for costs caused by inaccuracies which resided in Verizon's databases all along and which CLECs did not cause; and (3) correction of database errors benefits Verizon's retail operations. CLEC orders do not create errors in Verizon's databases, although they may very well reveal inaccuracies that have resided there undetected previously. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 16-17. To the extent that costs of database error correction are properly recoverable, they must be recovered in recurring rates because they benefit all ILEC and CLEC customers. Significantly, Verizon made no effort to identify and quantify manual activity reflected in its survey times and caused by Verizon database errors. Verizon simply included all activity associated with service orders regardless of causation.

C. Criticism Of Verizon's Model

Verizon's non-recurring cost model suffers from numerous flaws, which render it woefully inadequate as a basis for this Commission to establish non-recurring rates. The Verizon model improperly (1) fails to assume forward-looking network facilities and processes; (2) assumes a different network and processes from that assumed in Verizon's recurring cost model; (3) includes costs which should have been classified as recurring costs; (4) includes manual costs which should be eliminated by efficient automated processes; (5) includes excessive manual coordinated cutover costs; (6) is based upon a faulty survey methodology; and (7) includes a disconnect fee up-front at the time the service is ordered.

This Commission already cautioned that it does not consider existing, manual processes to be forward-looking, noting that "the cost of interconnection and unbundled network elements would be based on existing network design and technology that are currently in operation. Because this approach is not based on a hypothetical network in the short run, incumbent LECs could recover costs based on their existing operations, and prices for interconnection and unbundled elements that reflect inefficient or obsolete network design and technology. This is essentially an embedded cost methodology."[186]

Although Verizon characterizes its proposed rates as forward-looking, in fact Verizon's approach tracks very closely with what the Commission has characterized as an inappropriate embedded cost methodology. The prime examples of Verizon's embedded cost approach are its assumption that fiber-fed loops must be unbundled with embedded UDLC and its inclusion of unnecessary manual costs in its proposed non-recurring charges.

1. Verizon's Non-Recurring Cost Proposal Imposes Unnecessary Manual Cross-Connects And Does Not Fully Reflect A Forward-Looking Network Architecture.

Verizon's non-recurring cost study fails to include the forward-looking network assumptions that are clearly suggested by its own recurring cost study and thus produces costs associated with unnecessary manual cross-connects. Specifically, Verizon's recurring loop cost study reflects fiber feeder for 57% of all loops. Tr. 4922 (Curbelo). In addition, the forward-

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186 Local Competition Order at ¶ 684.

looking end office switching costs are based on 100% digital switching; this is significant because the most economical means of delivering telephone services to Verizon's customers when 100% digital switching is available would be via IDLC. *See* AT&T/WorldCom Ex. 13P (Panel Reply on Non-Recurring Costs and Advanced Data Services) at 13-18.

The "IDLC to Copper" rate proposed by Verizon is technologically inferior because it transfers service from fiber optic facilities to copper, (but only when the retail service is provided by new entrants); it imposes multiple manual interventions; and it imposes multiple analog to digital and digital to analog signal conversions. These conversions are unnecessary because IDLC can be electronically unbundled. *Id.* As explained by Mr. Walsh, the IDLC to Copper conversion, in addition to being technically inappropriate, provides new entrants with inferior service quality and inserts costly manual tasks – such as running copper jumpers on the main distribution frame– into a process that should be automatic.

As reflected in the NRCM, and as discussed by Mr. Walsh and Mr. Riolo, loops served off of IDLC can be electronically provisioned. *Id.* Loops served by IDLC are not connected to the main distribution frame ("MDF"), but rather bypass the MDF, thereby keeping the digital signal digital and eliminating the need for manual cross-connects at the MDF. With IDLC the cross connections necessary to reach the switch are provisioned electronically by the OSS as the service request navigates Verizon's systems. AT&T/WorldCom Ex. 2 (Walsh Dir.) at 32. Thus, the manual task of running a cross-connect is not required for IDLC loops.

Verizon's study ignores this technology and instead assumes, incorrectly, that unbundled loops will be provisioned on copper or UDLC facilities 100% of the time. This inflates

Verizon's proposed loop installation charges by a whopping $20.00.[187] In addition, Verizon assumed only 26% of the loops would be fiber-fed for purposes of pricing the UNE Platform, resulting in a 75% increase in the proposed charge for CO wiring for the UNE-P initial. Verizon-VA Record Request #21. Thus, Verizon has assumed three different levels of IDLC fiber feeder loops within this single docket, each assumption resulting in higher costs.

Verizon cannot ignore, or debate, that IDLC is being deployed by ILECs because it is extremely efficient. IDLC provides for the transport and handoff of multiple loops as a DS-1 on one fiber facility, which is integrated directly into the switch. Like other ILECs, Verizon integrates DS-1s directly into its digital switch for itself, which means that no manual cross connection on the main distribution frame is required.

If Verizon were permitted to impose a manual cross connection charge for each loop, it would deny CLECs the very efficiency which Verizon provides to itself and which is inherent in the forward-looking network. That would not be appropriate because the operational savings associated with avoiding manual cross connections are part of the economic justification for placing fiber and IDLC. CLECs should not pay recurring charges based on technology that is placed, in part, to reduce the cost of one-time activities that are reflected in non-recurring costs and then pay non-recurring charges that do not capture these cost savings.

Recently, an administrative law judge in New York recommended that Verizon's rates be set to reflect IDLC connections by May 16, 2002, unless Verizon can show that it would be unreasonable to make that adjustment. *Recommended Decision on Module 3 Issues*, Case 98-C-1357 at 92. For the reasons described above, the Commission should also follow this approach

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187 Verizon-VA Ex. 100, Ex. Pt. H, Section H, Cost Summary Line 1, Two Wire New Initial CO Wiring, Bates # VZ-VA 004094 [57% x $35.10 = $20.00].

and require that Verizon's NRCs, consistent with Verizon's own recurring cost model, reflect IDLC and not UDLC connections.

2. Verizon Has Misclassified The Recurring Costs Of Outside Plant Dispatch As Non-Recurring.

The key distinguishing characteristic between the costs that should be recovered in recurring charges and those that can be—but are not required to be[188]—recovered in NRCs is whether each cost, once incurred, is for facilities that can be reused to provide service to a subsequent customer without change. AT&T/WorldCom Ex. 8 (Murray Dir.) at 29-32. If a cost meets this test, Verizon should recover it as a recurring charge and not as an NRC.

Verizon fails to adhere to this basic principle with respect to charging NRCs to CLECs for field installation activities between the Network Interface Device ("NID") and the central office. Under this principle, no capital costs belong in the NRCs for unbundled network elements because all capital items could be used to supply service to another customer. This is true for plant dedicated to a given customer premises, such as the drop and the NID, as well as plant that can be used for many customers, such as general purpose computers and switches. This test also excludes all of the labor used to install and maintain such plant, because once the plant has been installed to serve one customer, another customer at the same customer premises could reuse that plant at no additional cost for that plant. *Id.*[189]

This leaves the cost of performing a transaction that only provides a benefit to the CLEC when it orders unbundled network elements as the only permissible costs that can be recovered

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[188] State commissions may, where reasonable, require incumbent LECs to recover nonrecurring costs through recurring charges over a reasonable period of time. 47 C.F.R. § 51.507(e).

[189] *See* Local Competition Order at ¶ 745.

in NRCs. These are the costs of actually performing the tasks of preordering, ordering, and provisioning.

Consider, for example, the loop itself. Verizon might construct an entire new loop to provide service in response to a service order request. That circumstance does not, however, change the basic fact that the construction of the loop is properly treated as a recurring cost, because the loop can be reused to serve another customer.

Another loop-related one-time activity that should be recovered in recurring charges is the physical cross connection at a feeder distribution interface ("FDI") of a loop's feeder and distribution plant. Because the connection remains in place when a service disconnects, Verizon can reuse that connection for a subsequent customer when that customer establishes new service to the disconnecting location. Tr. 4833-4 (Peduto). Hence, this one-time activity benefits all future users of a particular telecommunications facility and the costs of the activity are properly characterized as recurring.

Verizon has proposed a non-recurring installation and field dispatch rate of $100.79 for a basic loop it claims is needed to recover costs incurred when a CLEC orders a new loop.[190] The proposed charge is for making the cross-connection between feeder and distribution plant at a feeder/distribution interface, if necessary, when a request for service is received. Verizon has provided no appropriate justification for this charge.

The AT&T/WorldCom NRCM does not include a field dispatch and installation charge because fieldwork costs are properly treated as recurring costs. Once a line to a given location is installed, any subsequent customer at the same location can reuse the loop without making the

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[190] Verizon-VA Ex. 100 at Cost Summary, Line 1; Bates # VZ-VA004094.

connections or incurring the cost again.[191] Thus, consistent with cost causation principles, the NRCM does not reflect dispatch and installation costs as non-recurring costs.

Under the Commission's rules, "The local loop element is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central and an end user customer premises."[192] Because the Verizon recurring cost loop study includes everything required for a complete path, including the cross-connection at the SAI, it would be incorrect to include those same costs in non-recurring charges. The Commission explicitly instructs that loop costs shall be recovered through flat-rate charges;[193] under no circumstances should Verizon be allowed to recover field installation activities between the NID and the central office as an NRC.

Similarly, Verizon violates this Commission's rulings by proposing NRCs for field cross-connects that reflect maintenance expenses. Verizon's recurring loop rates already include a factor for maintenance. This includes the process Verizon describes of occasionally dispatching a truck to break a field cross connection so as to serve another customer, *i.e.,* rearrangement of plant. The cost of dispatching the truck for the rearrangement of plant is properly included in the maintenance factor included in recurring loop rates. In fact, when asked on cross-examination, Verizon's NRC panel conceded that the installation and maintenance costs for all of the

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191 As Verizon witness Peduto stated:

> Verizon has, I think, in testimony, said that it attempts to lead a feeder distribution interface cross-connect in place in the event that that feeder and distribution can be reused at the same premise fairly soon. Same thing on the main distributing frame, that in practice, Verizon loop connected to Verizon switch port, we would attempt to leave that MDF jumper in place for the same reason for a time until those facilities were needed elsewhere . . . . So, as a way of managing that network efficiently and effectively, we do leave jumpers in place for as long as they can be left in place without being needed somewhere else.

TR 4833-34 (Peduto).

192 47 C.F.R. § 51.319(a).

193 47 C.F.R. § 51.507, § 51.509.